

Coal-fired Sauna Stove for Vietnamese Markets

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Bachelor's Thesis

Bachelor's degree (UAS)



Field of Study Technology, Communication and Transport			
Degree Programme Degree Programme in Industrial Management			
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Title of Thesis A Coal fired Sauna Stove for Vietnamese Markets			
Date	19.04.2011	Pages/Appendices	68
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Client Organisation/Partners Thai Hung Limited Company			
<p>Abstract</p> <p>The purpose of this final thesis was to study the feasibility of the Finnish sauna to Vietnamese markets and after that to be able to produce the sauna stove and its sale service. A coal fired stove would be the key product, instead of the Finnish traditional wood fired one. During the final thesis project, Thai Hung's limited company was used as a case study.</p> <p>The marketing issues such as market researches, planning and implementation were considered at the beginning of the project. The empirical research methods, quantitative and qualitative tools were used to find out the situation on the market. From the gathered data, a process analysis was carried out to interpret the information and to reveal the findings. The sauna manufacturing process consisted of many sub-processes. Management tools were studied in this thesis and explanations of terminology used in quality function deployment, matrix house of quality and strategic trilogy are thoroughly explained. Marketing environment study with the help of FOST and SWOT analysis and stakeholders requirements were carried out clarifying the views about the market.</p> <p>In conclusion, the results indicated that there is a great opportunity in the near future in Vietnam to any producers of sauna products. The determined and crucial key how to succeed in there is to assure the quality of the product and service and always listen to "customers' voices".</p>			
<p>Keywords Empirical research methods, Quality Function Deployment, Strategic Trilogy and Stakeholder's needs.</p>			
Public			

CONTENTS

1	BACKGROUND TO THE STUDY.....	4
1.1	Purpose of the study.....	4
1.2	Sauna in Finland and its development history	5
1.3	Bringing Finnish sauna as a business idea to the Vietnamese market	8
1.4	Limitations of the study	9
1.5	Outline of the thesis	9
2	REVIEWS OF THE COAL FIRED SAUNA AND BUILDING A SAUNA.....	9
2.1	Re-designing a coal sauna in Vietnam.....	10
2.1.1	A re-construction and application of materials in use	11
2.1.2	A coal stove for the sauna.....	13
2.2	Why coal stove and its facts.....	14
3	METHODOLOGY	16
3.1	Research design.....	16
3.2	Research strategy.....	17
3.3	Research approach.....	17
3.4.1	Quantitative Research	18
3.4.2	Qualitative research	18
4	DATA ANALYSIS	19
4.1	Questionnaire	20
4.2	Qualitative technique	31
4.3	Findings	35
5	THEORIES APPLIED.....	37
5.1	Quality management methodology.....	37
5.2	The house of quality and QFD process	38
6	ANALYSIS ON THAI HUNG COMPANY AS A CASE STUDY.....	41
6.1	Stakeholder's needs in Thai Hung limited company	42

6.2	The goals of Thai Hung limited company	43
6.3	Critical success factors for the company	43
6.3.1	PEST analysis	44
6.3.2	SWOT analysis	46
6.4	Management process principles.....	48
6.4.1	Creation of demand	50
6.4.2	Fulfillment of demand.....	52
7	DISCUSSION AND CONCLUSIONS.....	56
7.1	Methodology discussion.....	56
7.2	Results and discussion	57
7.3	Conclusions and future research.....	57
	REFERENCES	59
	APPENDICES.....	63

1 BACKGROUND TO THE STUDY

At the end of engineering studies students will write their final thesis. The work will be carried out by students and have support from a supervisor. In this thesis I was guided by Mr. Mika Hentunen as an advisor and Mr. Jarmo Pyysalo as the second supervisor. Throughout the thesis, the student can deal with theories, methodologies and problems which can be used later in life.

After years of study in Finland, I was not only impressed by the country's nature and beauty, but also sauna culture really interested me. I came up with the idea to bring sauna culture out of Finland, back to Vietnam after my studies. As the education went further, the knowledge became more concrete. I found that idea a potentially good business idea and eventually it was appointed as the final thesis topic.

The product and service packages were not obliged to be exactly the same as in Finland because of several differences in cultures, living styles and people. Sauna still preserved its own features as it is meant to be, to bring relaxation for people in leisure time, in sickness or good time with family or friends. This study made an effort on building up a proper sauna which was designed according to Finnish standard. Later on, there will be consideration on alternative material resources when a coal fired sauna was set up as the key product to the Vietnamese market.

During my study periods in the recent years, this final project related to some courses and a lot of material was given by the teachers. Those courses helped in the implementation of this project and solving the problems. Last but not least, dealing with projects was also learned in this final thesis.

1.1 Purpose of the study

The main purpose of the final thesis was to study the feasibility of bringing a Finnish sauna to the Vietnamese market. Thus, which types of saunas dominated to be the most suitable for such a new market, were to be researched throughout. The sauna in this thesis was considered as a package which included a product and a service. Therefore, the marketing

issues and management of production were also studied with the aim to assure quality of the product.

Marketing researches played a vital role in the beginning of the project to find out the situation on the market. Research means of questionnaires and interviews were created to gather customer information according to age, income, habits, shopping attitudes and orientation of purchasing decisions.

In the production progress, the study concentrated on interest groups or stakeholders' needs to understand the relationship between them. Management's points of views were considered as quality control process. This part helped to understand the surrounding business environment, to take a look at suppliers and competitors in the market in the Vietnamese culture.

Throughout the thesis, quality was considered as the key to preserve competitiveness. An organizational level for quality management was applied and tools were used.

In the end, this project helped to find out whether a coal fired sauna was a possible business case or not.

1.2 Sauna in Finland and its development history

In Finland, sauna has its own role in the culture, in which it is greatly appreciated. From the beginning it was simply meant to give people a shelter, to smoke the food and it could be a hygienic place to give birth during a long cold winter time. After that other benefits which came from sauna were known better, for example its positive effect on human health.

A Finnish sauna still has had typical features since the beginning. Nowadays sauna is usually made of a wooden room with benches for sitting to fit all bathers. A stove is located at a corner. It heats up special stones that withstand heating and cooling after. Sauna is heated up to 80-120 degrees Celsius and steam is created by throwing water on the stones. The heat is transferred from the heated stones through water to the air to make the bathers sweat and to help to increase blood circulation in the body. This is repeated as many times as bathers like and as long as they can withstand the heat and moisture. After the perspiration in sauna, one can go out or have a bath to cool down the body. It is expected in Finland for people to take off all clothes when going into the sauna.

The sauna in Finland has its own history of developments that explains why there are various types and ways of how to use sauna in life relaxation. In this thesis, the researcher distinguished one from each other in the table and figures below:

TABLE 1. Types of sauna in Finland. (Rakennustieto, 2007)

Time	So-called sauna types	Stoves	Remarks
Before 1900	Original sauna	Brick-stove	Underground construction, simply built, split logs, bare earth floor, Ceiling covered with earth and birches.
	Basic sauna	Brick-stove	Corners-joining of logs, clay used to fill gaps, trodden earth floor, ceiling of birch-bark and shingles, couple ventilation holes.
From 1900-1920s	Sauna with flues	Flue-equipped stove (bricks, closed chamber)	Able to use in building with chimneys, water container attached to heat up water.
		Sheet-metal stove (Close-fired chamber, so-called heat storage version)	Heated only once for bathing.
In the 1930s	Yard sauna	Firewood stove (continuous heating)	Separate chamber, meant flames and smoke do not come into contact Framework boarding construction;

			the floor of solid slab of concrete; insulation of dusts and shavings (less effect and more use of water, not good ventilation, smell of rod and mildew)
	Public sauna	Steaming sauna	A lot of water used to create moisture.
In the late 1940s	Block sauna	Electric stove	Varies in sizes, set in time schedule for inhabitants.
In the late 1970s	Apartment sauna Sauna by the lake side (summer cottage)	Electric stove Electric (firewood) stove	Convenience in use. Included washing room, living room, cooking and sleeping places.

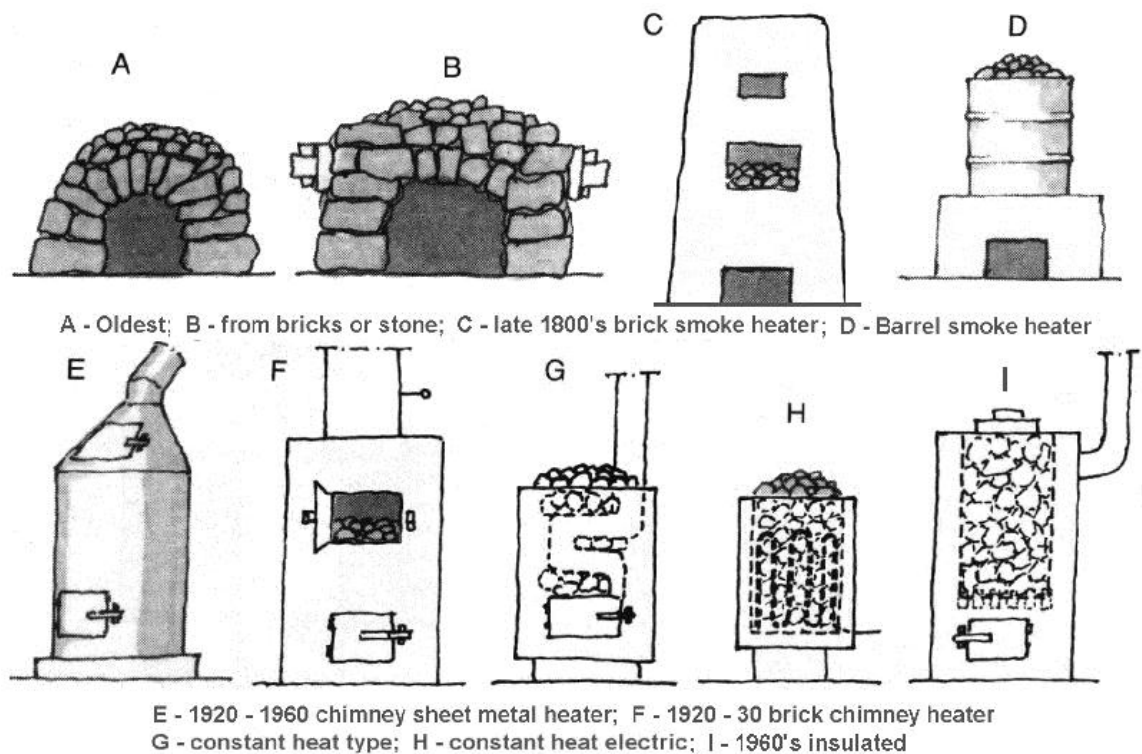


FIGURE1. The developments of sauna stoves in Finland (Rakennustieto, 2007)

1.3 Bringing Finnish sauna as a business idea to the Vietnamese market

The idea to bring the Finnish sauna to the Vietnamese market was created during the study period in Finland. The researcher was originally from Vietnam, his observation and personal experience were considered as an insider, along with foreign education that convinced there was a good chance to do business in saunas in Vietnam.

Sauna has been presented in Vietnam just a few years ago. Now it is becoming more and more popular. Thanks to the development of information technology, Finland is nowadays well-known with its strengths and culture as well as Finnish sauna is well-known. In fact people often confuse sauna and steam bath. The difference is not easy to describe in Vietnam. The problem is only about marketing that can be managed later when people have clearer views about sauna and its positive effects on health.

Even though there are differences between Finland and Vietnam in economics there are many people who can afford a good sauna at home if they understand its value.

There are also other differences in culture aspects and customs. In Vietnam, different aged family members, different genders and people with different relationship status may feel reluctant to come into sauna with each other. Sauna for household use can be the most suitable for the Vietnamese market. Otherwise, sauna for swimming pools or service can be other products, too.

Last but not least, the weather is very variable in Vietnam, a tropical country. There are four seasons and the normal humidity rate is about 80 percent in the Northern part. The weather is very different in Northern and Southern parts where there are only two seasons, the sunny and the rainy season. The sauna fits people from the North most because of a cool autumn, a wet and cold spring and a cold winter except a hot summer. The temperature varies from 8 to 37 degrees of Celsius, depending on the season and geography.

For these reasons, it is clearly reasonable to present the Finnish sauna and launch it into the Vietnamese markets due to its great health effects.

1.4 Limitations of the study

Apparently the sauna was quite a new term in such a country like Vietnam, especially in Hai Phong city where the studies were partly conducted. Sources of information about potential customers, competitors and supply during the project would be difficult. According to the research plan, more time would be needed to finish all the tasks.

This study was aimed to Vietnamese markets but the research was limited to people in Hai Phong city, since it was the researcher's home city. Additionally, sauna was quite a new product so the market was open to every competitor. It would be hard to figure out reliable information of competition and carry out an analysis.

1.5 Outline of the thesis

In the first chapter the aim of this final thesis was briefly introduced. The second chapter deals with a review of a new tailored coal fired sauna to the market of Vietnam. In the third chapter, methodologies are presented in terms of philosophies written or published in books. The chapter four shows up what findings have been gained and analyzed by the author. The next chapter, number five, goes deeper into the theoretical parts of management tools which were used. In the sixth chapter, analysis is made from theories applied from chapter five and appointed to the company as a case study. Eventually this thesis consists of the discussion and conclusions part in the chapter number seven.

2 REVIEWS OF THE COAL FIRED SAUNA AND BUILDING A SAUNA

A truly Finnish sauna is meant to be at least comfortable enough for the bathers. Compared to other Europeans, Finns seem taller and bigger in size so they require more space in the sauna. This research is done in Vietnam where people are much smaller so the size of the sauna can be down-sized and narrowed. Naturally this reduces the price, too.

In Vietnam, the most typical housing construction is 2 to 4 floor-houses instead of big buildings which are built a lot nowadays because of land limitation, compared to the increase of population. Due to this reason, houses have more space to build and install a sauna room into,

depending on how clients want it to be or which type would fit the best. Thus sauna is suitable for the Vietnamese metropolitan infrastructure, too.

Bathrooms are usually built pretty big even though sometimes they are unnecessary in Vietnam. Thus sauna could be designed rationally and built inside the bathroom, too. It helps to heat the shower system in winter time as well as the floor heating system. The saunas which range from 3-6 square meters would suit well to customers' expectations.

On the other hand, the availability of materials for sauna is also in consideration since the researcher realizes there are many differences between the two countries in several ways. In this study, a sauna using coal and electricity instead of a wood burning stove was chosen as the product.

2.1 Re-designing a coal sauna in Vietnam

“Thus as a product or service package, it defines users by living style, functionality, reasonable price, easy to access whereas being a manufacturer, it is necessary and crucial to have profit, enable to manufacture with variable material resources, enough need for use, or simply saying “meeting needs benefitable”. (Kotler, 2006)

The prospective sauna stove type which was assigned to Vietnamese market, would be a “coal-fired stove” made in Vietnam. The use of this stove has similarity to Finnish wood burning stove indeed. It needs to be modified so that it can be adapted to the market and customer needs. Researcher believes this is a good point to make the product different from any competitors' sauna stoves.

The sauna design is simply defined by following factors: users, frequency of use, location and stove type. The “coal-fired stove” is only considered as a part of product package that is planned and designed according to their expectations from the beginning. It is given to the customers in the end.

Firstly, the proper size of sauna room and the needed space is decided by customers, depending on how many bathers would fit into one sauna. A sauna may have a single user or even tens of users, varying according to the needs of the users. The basic idea of a sauna is to have a room to have people seated on the platforms, perspire in the heat of stove, relax and

wash themselves after all. All the different stages take place in the sauna bath: perspiring, washing, cooling, resting and dressing.

Secondly, the duration of use means how often users expect to heat the sauna for. It can be in a short period as a household's desire, or a very long heating time in a swimming hall and discretely heated up if built for sauna services.

Thirdly, the locations have to be safe and without flammable hazards before any product installation or construction plan. The main types of location are private houses, buildings, swimming pools and sauna service facilities.

Depending on the types of stoves chosen by customers for the sauna, the customers are advised to build an extra chimney.

2.1.1 A re-construction and application of materials in use

The coal-fired stove and electrical stove are manufactured in Vietnam. The sauna room is also built by using alternative materials which are available on the market. The quality of alternative materials is tested carefully e.g. heat resistance, moisture affects and distortions that may happen after sometime of use. If the alternatives do not satisfy the requirements of quality, imported materials are considered.

The design of the sauna stove is modified so that no changes to the original sauna functional characteristics are made. It is obliged to follow the basic principles on how to build sauna room so that the product can serve customers with its best performance. By taking this into consideration, it prolongs the life cycle time of the sauna.

Once again, with three different product packages which are single household sauna or the apartment sauna, the swimming pool sauna and the service sauna; there are some common remarks in construction that need to be paid attention to when construction works are being carried out. [1]

Height

The basic dimensions which are required for a sauna are the usual height of 2000-2200 mm, 1000 mm counted from ceiling to present room heights. Minimum platform length

recommended in sauna is 1800 mm, per person it is 600 mm. An exception may be 1500 mm long.

Benches

The width of the sitting platform ranges from 400 to 900 mm, and the platform for feet and the step is 300-400 mm high, designed either straight or aligned one wall, or in L or U shaped, up to arrangements.

Windows

Fenestration in sauna is another important fact that affects the age of sauna since even a small window will make efficient ventilation during bathing, cooling down and drying after, provide light and can be considered as a mood of sauna to make it appear larger.

Door

The access from the door to the platform should be protected and it should be at a sufficient distance from the hot stove. The door should have no threshold and it should be open outwards. A gap of at least 50mm beneath of the wooden pull and fitted with roller catch is highly recommended.

Thermal insulation

The heat-storage properties of walls and roof are affected by the choice of structures and elements. In order to prevent the heat to get out of the walls, the interior surfaces are fitted with an additional insulating layer, usually of mineral wool. The floor of a sauna is used regularly, and it can be thermally insulated by mineral wool or cellular plastic. The thermally insulated floors of a sauna and washing room can be constructed with water-circulation or electric heating elements, installed during casting in the topping layer.

Water and moist insulation

The components and elements surrounding the sauna are to be insulated against water and moisture invasion to prevent damages of adjacent wall surfaces. Enough attention should be paid on transmission of vapor within components and elements. Once vapor in the air is admitted into the components, it would condense in the thermal layer, thus weakening its effectiveness and eventually damaging it.

Sauna must have its components properly insulated to prevent moisture invading into other rooms. Sauna requires sufficient ventilation to dry the sauna after use. The ventilation is fitted to a vapor barrier made of heat-resistant vapor plastic or paper hardened with reflective aluminum foil.

The joins of door and window and the walls can be insulated by insulating foam or tape to prevent moisture from entering. Plastic mats with welded seams are suitable floor coverings for moist rooms.

Thermal and moisture insulation constructed in Vietnam

The fact is that most buildings and houses in Vietnam are made of bricks and reinforced concrete because of variable weather conditions. Essential insulation is very important. Wooden beams are added to the components on the wall, not only as a traditional feature but also due to their technical properties. A wooden side wall stores heat and its change slowly also absorbs the moisture from the air. Next to wooden beam layers, there should be a gap for air ventilation. It keeps the sauna dry and provides air circulation all the time. Moisture should be prevented entering from the air to the bricks and the heat is stored inside the room. Radiation should be reflected back to the sauna room by aluminum foils which cover mineral wool layer next to brick wall.

For the roof, roofing materials depends on the shapes, pitch, the desired appearance and color. For typical infrastructure in Vietnam, the roof is also built of bricks and reinforced concrete. Extra insulation layers would be considered carefully so that they fit to condition of construction. The use of bitumen or plastic layers for prevention of water vapor and moisture is required as well as elastic seams at the points where the floor joins the walls.

The space above the ceiling is also ventilated. Windows and vents let the air come in and go out and these must be adjustable. Windows and doors can be selected so that natural light comes in. A door completely made of glass is always made of strengthened security glass.

2.1.2 A coal stove for the sauna

The idea why the researcher came up with a coal stove for sauna was related to the basic functions of how to use a wood-fired stove for heating a sauna in Finland.

The wood-fired sauna with its own characteristics and advantages is used in Finland widely because of high reservation of wood and a dry climate. In Vietnam, coal is readily available. The use of wood or coal both requires a chimney for the combustion since there is smoke coming out and gases.

The differences between a wood-fired and a coal-fired stove are emission properties. Coal emission contains more toxic chemical gases. More effort to filter these gases is needed before they can be emitted to environment. There is also a change in the design of combustion chamber which is completely closed. Thus, there is no hazard of carbon monoxide cases.

To withstand the disadvantage of carbon monoxides toxic, the chamber must be utterly closed, stove will be subjected next to the wall, and stove door will be designed outside so that coal can be injected from outside. A chimney is installed to let the smoke go out. It must be equipped with filtering layers to absorb harmful gases. A good solution is to use Ozone filters that are available in the market.

Almost every household in Vietnam uses coal for cooking because it is cheap and easy to use. People are experienced in how they should use coal without any harm. That makes coal stoves a good choice. Moreover people are conscious of what effects coal brings along. It leads to alternatives of clean coals that create less carbon compounds. In these materials, bio-substances such as rice husk, coconut shell are added. [5]

2.2 Why coal stove and its facts

Coal currently attracts criticism in the press because of concern that it is playing a main role in global climate change. Coal is still the main source for the developing countries to have access to electricity at an affordable price. Any attempts by countries that have already enriched themselves through the use of cheap fossil fuels to prevent developing countries from raising the living standards of its population are likely to be met with an understandable resistance. [2]

Nowadays almost 80 percentage of the world's energy is generated by fossil fuels, dominantly (34,4 %) oil and (26 %) coal. Currently 41 % of electricity is generated by coal and this trend is going to continue [2]. Coal will be just as important an energy source in the future as it was in

the past and it is today. Coal is the world's most abundant fossil fuel. Coal resources are widely dispersed geographically around the world and also in Vietnam, in the North.

Coal has been playing a key role in the development of Vietnam. It is estimated that the total amount of anthracite in Vietnam is 3.2 billion tons and has been extracted for more than 120 years. It is now managed by Vietnam National Coal - Mineral Industry Group (Vinacomin). In the year 2004, Vinacomin exploited 27 million tons of run-of-mine (ROM) coal and was projected to extract 42 million tons in the year 2010 [4]. Currently, coal is the main energy source for many industries in Vietnam such as paper, cement, power, etc. Demand for clean coal is increasing sharply every year.

TABLE 2. Demand estimated in present and future. [4]

Unit: million ton

No.	Demand holder	2003	2004	2005	2010	2015
1	Domestic holder	10.20	10.50	12 – 13	20 – 21	24 – 25
	Power plant	3.00	3.90	5.3 – 5.6	11.6 – 11.9	13.2 – 13.5
	Cement	1.45	1.52	2.5 – 2.7	3.8 – 4.06	5.0 – 5.2
	Construction Materials	0.47	0.56	1.4 – 1.6	1.6 – 1.8	1.8 – 2.0
	Other Industries	0.20	0.23	1.1 – 1.2	1.2 – 1.3	2.0 – 2.1
	Other	4.68	4.69	1.7 – 1.9	1.8 – 2.0	2.1 – 2.2
2	Export	3.80	3.60	4 – 5	2 – 3	2 – 3
3	Total	14.00	14.50	16 – 17	24 – 24.5	26 – 27

In such a developing country as Vietnam, there is always a high demand of using electricity to produce domestic products from coal not only in the industrial sector, but also in the everyday life of inhabitants. The use of coal is widely spread due to its characteristics and easy access, advantage at price per performance of combustion and effectiveness.

3 METHODOLOGY

In this chapter, the methodology is associated with constructing and designing questionnaires, measurements, statistical procedures and other following methods described. First of all research design is going to be presented as well as research approach, research strategy, data collection and analysis.

3.1 Research design

“A research design is the basic plan that guides the data collection and analysis phases of the research project. It is the framework that specifies the type of information to be collected, the sources of data, and the data collection procedures”. (Kinnear & Taylor, 1996)

The three main types of researches can be classified as exploratory research, descriptive and causal researches. Exploratory research is selected as the most appropriate in this thesis. The research objectives include identifying problems and opportunities, gaining management and researcher perspective concerning the character of the problem situation and formulating alternative courses of action and gathering information. The purpose of this research meets the needs of information the researcher seeks for when hypotheses regarding potential causes and chances present in the decision situation shall be formulated. (Kinnear & Taylor, 1996)

3.2 Research strategy

A research strategy is 'an empirical inquiry that investigates a contemporary phenomenon within its real life context especially when the boundaries between phenomenon and concept are not clearly evident'.

3.3 Research approach

The empirical part of the thesis includes both quantitative research and qualitative research which were carried out to gather information, primary data. These two methods help to bring out different aspects on targeted consumers. The quantitative research was conducted to pilot-test consumers' attitudes and opinions. The qualitative method focused on orientated customers and specialists who were able to provide in-depth information with valuable knowledge on the matters by the phone and personal interviews. The interviewees were chosen intentionally and satisfied the research sample selection.

The purpose of the research was to find out consumers' attitudes and experiences towards sauna bath in general and particularly about Finnish sauna in Hai Phong city. The targeted groups were city resident who have and have not tried or had a sauna bath before. These groups have adequate purchase power and their age ranges from 20 to 60 years.

Having a sauna (usually considered as steam bath) is often related to people who have good income and are financially independent. Children and teenagers below 20 years old were not selected in the survey. Low income group whose income is less than 100 euros per month was not selected.

Eventually, people who live in Hai Phong city, age from 35 to 55 with a proper occupation are the most potential respondents for the survey. Meanwhile housewives and students belong to a special group because of financial competences. Their income supposedly remains low for a purchase decision.

3.4.1 Quantitative Research

The research was designed in a form of questionnaires which allow the researcher to have access to a great amount of consumer data in a short period of time. Because of its flexibility, the questionnaire is the most common instrument used to collect primary data. The questionnaire was carefully developed, tested and debugged before administered on a large scale. (Kotler & Keller, 2006)

The researcher picked up three locations in Hai Phong city to perform the face-to-face questionnaire with respondents. During filling of the questionnaires, the researcher stood next to respondents to offer assistance and explanation if needed.

The first location was the city center where many shops and shopping malls are located. It helped the researcher to save time and able to survey many people. The selected respondents were mainly adults whose age varied from 35 to 60 since researcher segmented this group into most potential clients for future purchases.

The second location was the shopping mall five kilometers away from the city center. Many people go shopping or have entertaining activities there, such as spa and relaxing. The age of respondents was selected to be from 20 to 35 years old. Eventually researcher picked up a random coffee house to give the questionnaire to the customers in that place.

There were 150 questionnaires handed out in total in a time of 9 days which were from 2nd to 5th and from 7th to 11th February. There were 133 answers to questionnaires so the rate 88,6 % was excellent.

3.4.2 Qualitative research

Qualitative techniques such as focusing on groups and in-depth interviews are often touted as the only types of research that allow the decision maker and the researcher to see respondents in the flesh and hear them talking about marketing issues in their own words (Kinneer & Taylor, 1996). In-depth interview is one of the most common methods of data collection in qualitative research. Deep interview can be used in conjunction with other techniques to supplement each other. Researcher can conduct the interview on individual one to one basis or in small groups. (Craig & Douglas, 2000)

Qualitative research helps to reveal the nature of certain situations by enabling the researcher to gain an insight about the nature of a particular phenomenon, to develop new concepts and discover problems of the phenomenon. Moreover, it also provides means through which the researcher can evaluate the effectiveness of particular policies, practices or innovation. (Leedy & Ormrod, 2001)

The in-depth interviews were carried out simultaneously with a handed-out questionnaire and they were also face-to-face interviews. The main purpose was to understand consumers' attitudes and opinions towards a new product on the market better. The interviewed group included engineers, steam bath shops owners, businessmen and construction work suppliers who were more or less related to the business field of sauna and were chosen on the base of researcher's observation when looking for steam bath service spots in city area.

All the questions of the interview were asked in a similar way. Thanks to this way, mistakes and difficult terminology were eliminated.

In the in-depth interviews, there were 10 participants. From observation, 6 steam bath service centers owners were interviewed. An engineer working in the technical field for Hai Phong's harbor service company and another engineer from LG research and development department were selected through researcher's friendships and social relationships. A local entrepreneur and a city governor were also found for the in-depth interviews thanks to researcher's parents' friendships. They were all picked up intentionally for specific purposes of research.

The interview was planned short enough not to let the interviewees feel tired or reluctant to answer the questions. Questions were formed to make them clean, easy and understandable and they were presented in 15 questionnaires. On average, a single interview took 20-30 minutes to complete.

4 DATA ANALYSIS

By carrying out the empirical part of the thesis, both research methods were used, quantitative and qualitative. Limitations and obstacles of each method were reduced so that the validity and reliability of the research would be improved.

Two types of interviews were given to interviewees, in form of questionnaires and in-depth interviews which corresponded to potential end-use consumers and business to business customers or specialists. The aim of questionnaire interviews was to identify the demographical facts that affect the sauna purchase decisions. Meanwhile qualitative method gave more reliable information to the researcher by in-depth interviews. Excel was the main tool for analysis in this final thesis.

4.1 Questionnaire

The questions consisted of the following questions.

Question 1. Your gender [] Male

[] Female

The gender distribution is shown as in the figure below.

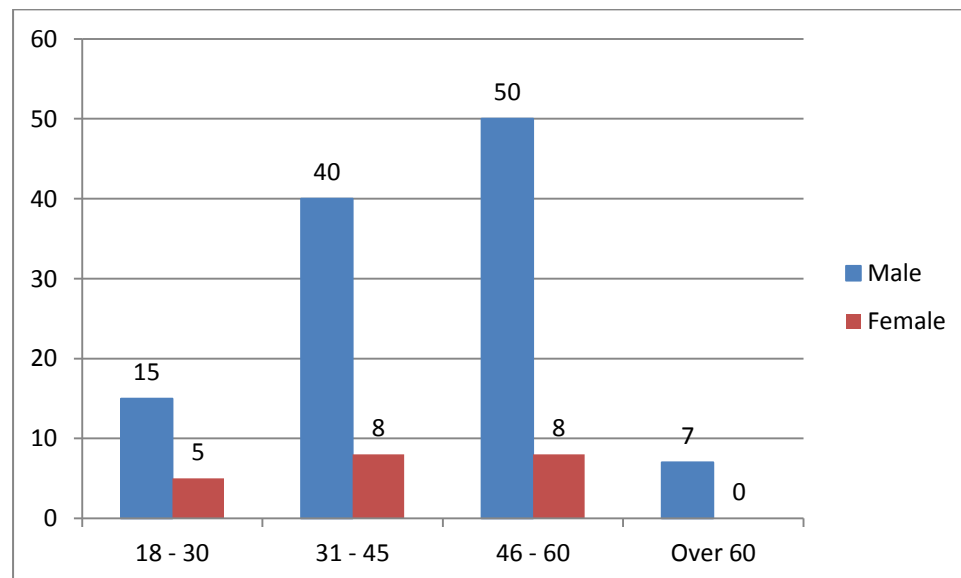


FIGURE 2. Gender distribution of respondents (n=133)

From the figure, 84% percent of respondents were male and 16% of female. Not only distribution of genders was shown in this figure but also a relation between genders and age groups which was from the oncoming question.

Question 2. Your age

[] 18-30 [] 31-45 [] 46-60 [] Over 60

The age distribution is shown in the figure underneath.

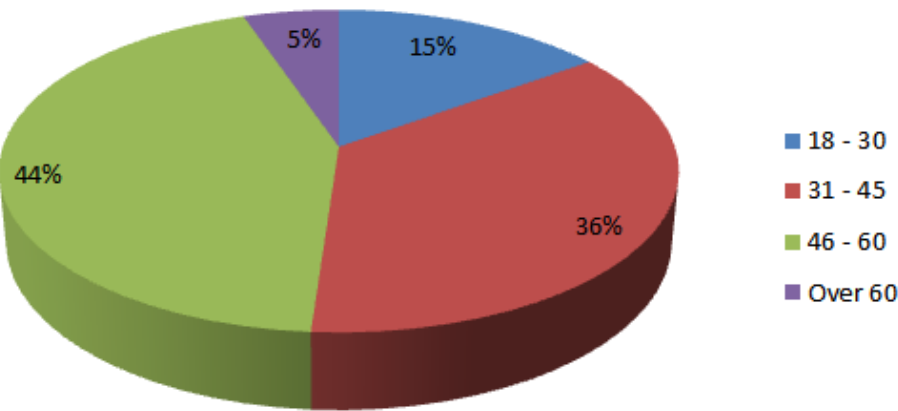


FIGURE 3. Age distribution of respondents (n=133)

The data collected satisfied the researcher since two main groups aged from 31 to 45 and from 46 to 60 were anticipated to be the most potential consumers. The reason why author picked up this age group is that they have the possibility to make purchase decisions with their income and job stability. They also pay intention to relaxing activities compared to other groups.

Because of the culture aspects, the last two questions 14 and 15 asking about respondents' background information were created and located at the last part of the interview.

Question 14. What is your occupation?

- [] Basic employee [] Technician [] Engineer
- [] Doctor or teacher [] Policeman or military [] Business and manager
- [] Others

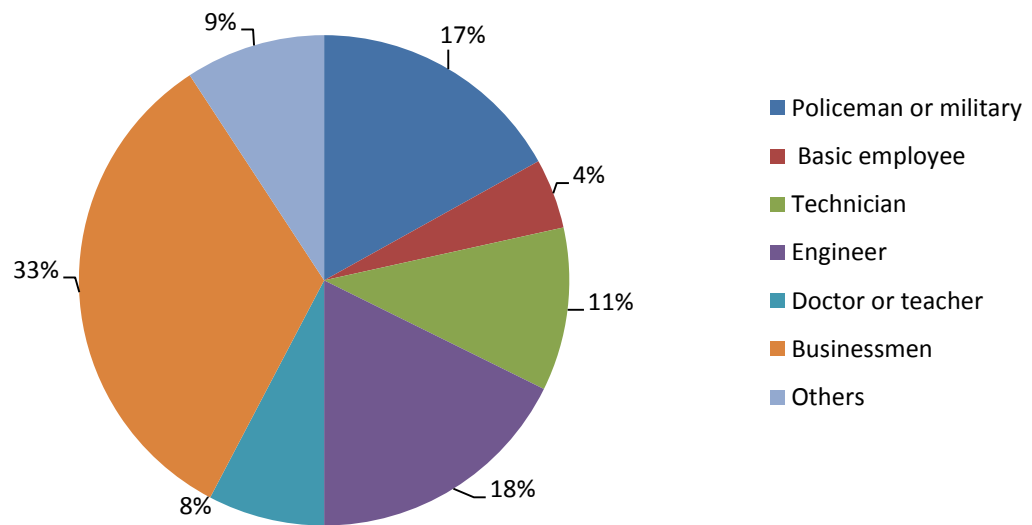


FIGURE 4. Occupation of respondents (n=130)

The majority of the respondents were businessmen and managers. They occupied approximately one-third in total of respondents with 33%. The second largest group was engineers for 18%, 1% unit less for police and military group. While technician, not specific and doctors and teachers group successively took up to 11%, 9% and 8%. Last but not least, 4% was answered by employee group.

Question 15. You may answer this question or not. How would you rate your income?

[] 700-1500 euros/year [] 1501-2500euros/year [] 2501-5000euros/year
 [] 5001-10000euros/year [] Over 10000euros

TABLE 3. The income of respondents. (n=29)

Income	700-1500	1501-2500	2501-5000	5001-10000	Over 10000
Number of respondents	0	7	13	9	0

For the last question, the interviewees had a possibility to answer or not on their incomes. The response rates were very low, only 29 answered this question, 21,8% in total. The reason for this was that people felt reluctant and uncomfortable to reveal such personal information as income. Most of respondents indicated their income to be from 1500 to 10000 euro/year. 5,2% had the income from 1500 to 2500 euros a year; 9,8% earned from 2500 to 5000 euros and 6,7% had an income from 5000 to 10000 euros.

The attitudes of respondents and their consumption behavior were asked in questions 3, 4, 5 and 6.

Question3. Have you had a “steam bath” before? [] Yes [] No

If yes, what is it like?

The question was designed to find out if steam bath was well-know and popular to respondents in the first part, by filling in yes or no options.

The figure below shows the percentage of people who had been in the steam bath in Vietnam, corresponding with age groups. The middle-aged groups, aged from 31 to 60 years old had the highest attention and had already experienced steam bath before. 93,75% answered yes in the

age group of 31 to 45 and in the age group 46 to 60, the response rate was at 89,7%. In young people group, there was also much interest in steam bath with 80%. Taking a minority part was people in the age group of over 60 with 28,6 percentages.

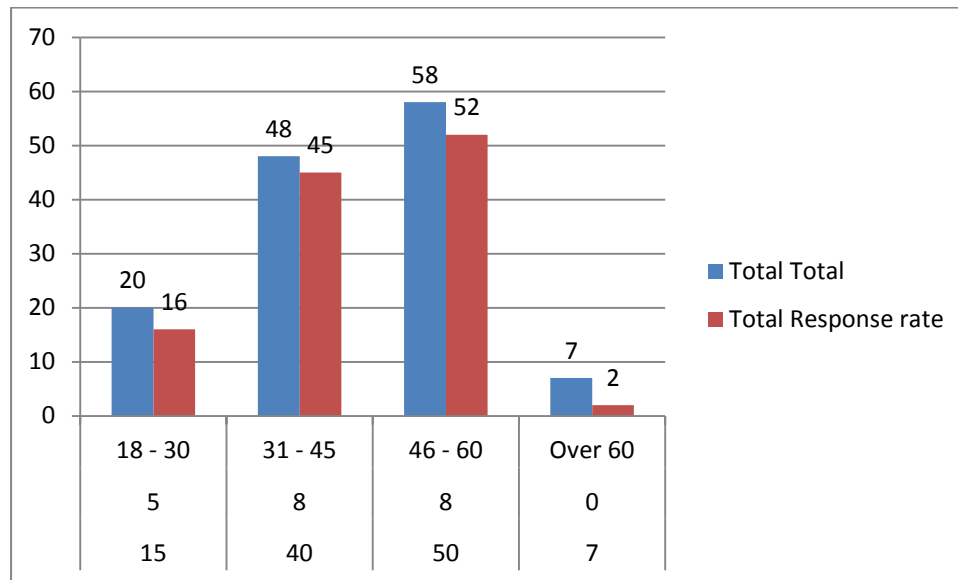


FIGURE 5. Response rate of people who had been to steam bath (n=133)

The second part of question 3 was an open question; the respondents shared their experience about “sauna” as being “a steam bath” in the questionnaires’ results. It was described that respondents went to a steam bath service. The steam bath was usually served to a customer from 30 minutes to one hour from a steam stored tank which was installed behind the wall of each bathing cell. By adjusting a valve, a bather let steam come out as much as they desired.

Question4. How often do you have a steam bath?

TABLE 4. Relation between age and frequency (n=115)

Frequency	Age			
	18-30	31-45	46-60	Over 60
Few times a week	0	15	26	0
Once a week	2	8	15	0
Once a month	5	13	8	0
Once in a few months	9	9	3	2
Sum	16	45	52	2

The data was tabulated as seen above, in order to indicate the frequency of having steam bath corresponding to the age of bathers. Young people use steam bath less compared to next two other groups. Apparently the reason was financial issues. The adult group aged from 31 to 60 was able to afford a higher frequency of having a steam bath due to stability of finance.

Question 5. Do you have any ideas about Finnish bath called “sauna” and have you tried it before?

Question 6. If not, what would you think about having a dry hot steam bath by water thrown onto heated stones to moisture the air, temperature varies from 60-90 degree Celsius?

When asked about Finnish sauna and experiences respondents had, only 3,75% of interviewees pointed out having been to a Finnish sauna before. For the others, they had never heard about such a thing. But in the question 6, a number of 133 interviewees would try the Finnish sauna if given a chance. Even though bathers were not interested in sauna at 90 degree Celsius, many explained “it is as hot as when the water turns into steam when boiling”. They agreed that 50-70 degrees Celsius is good enough to have a proper hot bath.

The idea of these two questions was to figure out how people in a tropical country expected the sauna to be. Finnish sauna was a good idea and worth testing but it should not be too hot.

From this point of view, the researcher saw a high possibility that there was a demand for Finnish sauna. Its image needs to be improved, considering its quality and health effects towards Vietnamese bathers.

These questions below were created to gain people's opinions about marketing related factors that influence their needs before a purchase decision could be made. Since it is always important to appraise the existing or potential competitors in the market, serious attention should be paid to the market shares and how potential customers consider their products.

Question 7. Do you know and pay attention to any existing product brands on the market? If yes, what would it be?

Surprisingly to the author, all respondents who were asked had no ideas about any specific products from any producers on the market.

In the following questions, concerns of researcher about respondents' consumption habits and marketing issues were researched when providing respondents information of locations, prices and technique features of a sauna in the questionnaire. The aim was to understand what a potential customer would desire to have in a sauna so that in the later part, marketing strategies and management tools would be used to satisfy their need.

Question 9. Where would you prefer to have the sauna located?

☐ At home

☐ Provided in a service shop

☐ Swimming hall

TABLE 5. Relation between respondents' age and location (n=133)

Question 2. Age	Total	Location		
		Service	Home	Swimming pool
18 - 30	20	10	7	3
31 - 45	48	27	21	0
46 - 60	58	18	40	0
Over 60	7	0	7	0
Total	133	55	75	3

Tabulation and percentage calculation, it showed that 41,3% of respondents were interested in having the sauna by a service providing spot. Meanwhile 56,3% of interviewees shared the idea of having it at home with family. Only 2,2% indicated that they would try the sauna at a swimming pool and all of them were young adults.

Indeed there was not a huge difference between interests in the service sauna or the home sauna. The reason for this might be either a financial problem or comfortableness of having sauna served in a service shop. Home sauna still took up a greater percentage. Supposedly by the time more people can afford sauna of their own. There was no doubt a sauna of their own would be a sophisticated way of relaxing.

The next question was a concern about price that a potential customer could afford. Even though Vietnam had the GDP per capita of \$3,100 (2010), \$2,900 (2009) the difference between different social classes was huge as in many other developing countries. Inflation and socially financial disparity were also considered. The targeted customer segmentation was out of the low income group. Question number 10 was elaborately made after social marketing observation and experiences. The aim was to figure out how much a potential customer would be willing to pay for the sauna package.

Question 10. If you are about to build up a sauna at home, how much would be reasonable to spend on it?

☐ 700-1300 \$.

☐ 1301-2500\$.

☐ 2501-4500\$.

☐ Over 4500\$.

All information was tabulated as follows:

TABLE 6. Professions and Price Preferences of Respondents (n=130)

Professions	Total	Price (\$)			
		700-1300	1301-2500	2501-4500	Over 4500
Basic employee	6	4	2	0	0
Technician	14	3	11	0	0
Engineer	23	14	5	3	0
Doctor or teacher	10	1	2	7	0
Businessmen and manager	43	13	9	14	6
Policemen or military	22	6	11	5	0
Others	12	2	8	2	
Total	130	43	48	31	6

By committing a relationship between professions and price preference, attitudes and opinions of the respondents towards issue of price would be recognized easily. Since the first price category was quite reasonable for the sauna, 33% of respondents showed a desire to have a sauna with 700 to 1300 euros. The second price option also impacted respondents' mind with the price of 1301 to 2500 euros, took up about 36,9% in total. Interviewees who would be willing to pay for 2501 to 4500 euros accounted for 23,8%. Eventually for a small segmentation which desired to have the splendid sauna, the potential customers thought even a higher price for a sauna, accounted for the 4,6% of respondents.

In the next question, the most appropriate types of sauna stoves were asked from the respondents.

Question 11. Which types of these stoves are tailored to you at best?

☐ Safety coal burned stove ☐ Electric ☐ Other:....

The results surprised the researcher again after the data collection. A coal burn stove could not convince respondents at a term of safety except the fact they were conscious of the fact that coal burn provided better heat and easy accessibility. No surprisingly the electric sauna stood out to be a better option since it is clean to use, available and suitable for the civilized

life. When asked about respondents' suggestions, it turned out that gasified sauna stove would be an excellent product; an alternative for coal stove. The table below gives an illustration:

TABLE 7. Relation between price and product selections by respondents (n=128)

Price (€)	Respondents	Coal burn stove	Electric stove	Other: gasified
700-1300	43	7	20	16
1300-2500	48	11	27	10
2500-4500	31	0	25	6
Over 5000	6	0	5	1
Sum	128	18	77	33
Percents (%)		14	60	26

The last three questions were designed to collect respondents' feedback and opinions of the Finnish sauna idea for Vietnamese market as well as made in Vietnam stoves.

Question 8. How do you think about Finnish sauna produced in Vietnam for Vietnamese with original Finnish styles?

Many respondents gave the comment that "there will be more and more bathers for steam bath and the Finnish sauna is a good thing to try". The others had a point of view to share that "It needs to be changed in some characteristics to get people used to it first". Some respondents were skeptical about the difference of qualities if it could be produced in Vietnam.

In a short conclusion, all sorts of different steam bath types have almost the same function or way to use so for the Finnish sauna, people can easily adapt to it. If it is really good to health then it would have a big possibility to increase soon. However the Finnish sauna is not well-known in Vietnam yet. If there would be more effort to bring its reputation and benefits to health effects to Vietnamese users, the sauna would become a vital part in life as it was meant to be to the Finns.

Question 12. If there is such a factory that manufactures and produce all types of saunas that you are assured about the quality and safety, how do you think about its success?

Question 13. Any comments on types of saunas that would succeed in the future?

TABLE 8. Idea about the future sauna stove (n=130) and factory facilities (n=89)

Sauna types	Q 12. Idea about a factory establishment			Q 13. Most successful type in the future
	Bad	Good	No idea	
Coal burn	17	23	8	19
Electric		52		43
Using gas		21	9	27
Sum	17	96	17	89

The table above illustrates the feedback and comments on the sauna types and possibility to open one factory in the future. 13% of respondents doubted or seemed to be skeptical about success of a factory establishment which would manufacture stoves, spare parts and supply other necessary equipment for the sauna along with services, located in Hai Phong city. The reason respondents did not believe in its future was that people felt reluctant to change the bathing habits and the Finnish sauna was quite a new definition. Despite most of them were willing to try.

Respondents, who were optimistic about the factory future contributed 73,8% with an agreement about its success in the future. "Because there is a huge need and it just has to be discovered". Other respondents indicated a view that "we are full with what we have now, in this life. We need something new to enjoy and relax". Many mentioned "that is a brilliant idea for today's business". The researcher was encouraged and enthusiastic when many comments met his thinking from the day the idea came up as the final thesis project.

Besides the two straight answer good or bad, some respondents were reluctant or at some point could not give either good or bad, they picked no idea option. Coincidentally,

respondents who were wondering between “good” and “bad”, made up an equivalent percentage of 13% with whom felt skeptical about the factory future.

Eventually, when asked about the most suitable types of stoves that would succeed in the future, most respondents appointed the electric stove to be the best choice for 48,3% because of its excellent characteristics in use. The gasified sauna which was “clean and very wise to use” according to respondents, marked up for 32,5% could be an alternative product for the future. It was unpredictable for the author indeed. Even having less attention than the other two, a coal burning sauna still had its own role in the game, when 21,3% of respondents appreciated due to its basic use and its effectiveness.

4.2 Qualitative technique

The quantitative questionnaires had been handed out to respondents before the data was selected and used for goals in the next survey of face-to-face interviews. Qualitative method was used as the main strategic tool in this study to go deeper into customers’ real needs and behavior; for example the need of service supply such as steam bath shops. After respondents attributions with their attitudes and opinions were collected and analyzed from the returned questionnaires, the researcher summed up and found a real demand for the sauna. Supposedly respondents would be the end-use consumers, who had not tried or experienced such a new product as the sauna and since the true demand might not be stable. For this reason, proper selection of the interviewees who could be more experienced about the product as well as marketing, were chosen as a main group of this in-depth interview. Researcher found the most suitable group for this interview, persons who were more or less involved in the section of steam bath business such as shop owners, metal-work engineers and authorized people of the city government. This group was different from the group the questionnaires had been handed out to.

Basically the interview was designed with 3 background information questions that concerned age, gender and profession of respondents. Question number 4 asked respondents whether they have heard about the Finnish sauna. Again the response rate was 0%. After researcher started explaining what the Finnish sauna was like, how it could be used and what benefits bathers might have, respondents were all enthusiastic and curious about sauna.

The information about competitors was always crucial to marketer but during the research, the author was not able to collect any specific information of competitors from the first survey. Fortunately with questions numbers 5, 6 in the in-depth interview (Appendix1), the case was unveiled step by step. The competition was rough instead of being very still as noticed earlier. Thai's spa center's owner revealed her opinions "A steam bath package (included all facilities and installations) is very diverse in the market now, depending on the need of buyers. The products mostly come from China. For us to run this business, a Chinese product is acceptable due to the price and easy to have payback even though customer service is not so good". Meanwhile in another interview in city center, the owner shared his opinions "there is a huge change nowadays in living styles when many earn more and desire a better living standard. The price is not the priority factor when the buying decision is made. I think sooner or later, my service needs to be improved both service and facilities in the near future", said Doan Van Cong, interviewed 18th Feb 2011. Most of steam bath service spots used products manufactured in China, researched in 6 locations.

The following questions 7, 8, 9 successively concerned marketing issues, frequencies of customers visit at their service and how much they were interested in the variety of service in general and types of sauna particularly.

A shortcut to question number 8, shop keepers shared that the service went on alright during the year, except 4 months in the hot summer, starting in late May until the end of August. There was also an added important point that customers were always anxious for new features or changes in styles of sauna. The 474 Lach Tray Steam bath center shared "Being a part of competition with other spa' centers, we also need to improve service quality by up-to dated new products of steam baths, nice decoration, to serve customers. The business was started with normal steam bath way before. Nowadays some customers may require the herb steam bath. So new facilities like tanks for the whole body deepened into, new heating systems must be built", said Cao Nhu Tuong, interviewed 18th February, 2011. All the shops indicated "there will be changes in a few next years but I do not know when and how or what is to be changed". Those things were mentioned in answers to question 9 (Appendix 1).

In the question number 7, researcher built up a table that respondents could mark down what their opinions were, concerning the price, product, place, promotion and customer service.

TABLE 9. Price, product, place, promotion and customer service rates (n=10)

Rating	Price	Product	Place	Promotion	Customer service
Very important	8	10	1	2	10
Important	0	0	1	6	0
Not much	2		8	2	0
Sum	10	10	10	10	10

When asked about the 4P's in marketing, almost all respondents were sharing the same opinions about the item. Three highest ratings were price, product and customer service. 80% of interviewees thought price was a very important fact that was always come first in buyer's mind whereas other 20 % disagreed. They started explaining why not to choose the price as the first one. "For a product, it is very important for consumers if the customer service team makes us feel how much they would care about their clients by after sale, responsibly. They are importantly interacted, product and service in either way. Talking about the price, it is not much important because the price is proportional to promotion. It is impossible for the producer to offer a cheap product with high promotion and quality. Then the product would be a cast-off. We all know business is all about benefits", said Nguyen Duc Thang, director of a building and transporting limited company, interviewed 16th February 2011.

For the concern about the location that businessman shared " I do not mind if I see an item in Sai Gon (1500kms to the South), I can wait and make a phone call, pay for it, and get it within a month. Nowadays business does not require a big store to sell products. All they need is good advertising, good marketers to deal with customers and an online website page". Obviously globalization appears in all corners of the world.

Vietnamese spenders nowadays become more aware and conscious about products and promotions of products. It was shown in the table that 60 % of interviewees considered it not very much important.

In the last column, all respondents pointed out that they consider customer service very important.

The three last questions were designed to consult respondents about the coal burned stove and at what price it would sell best and feasibility to penetrate into the future market if a factory was established.

In the steam bath spots, there were four business owners using big coal-burn stoves due to the need of great heating capacity. Other two shops used the electric steam system to heat up the water. The average price for a sauna ticket was approximately 8 euros each time. The owners explained to the researcher how they used different steam heaters for different business goals. The coal stove was heated to boil the water to create steam, stored in a big tank connected to many pipes and valves. The pipes were connected to private cell rooms to each bather. Depending on how much heating bathers want, they could adjust the vault to control the steam coming out. An extra humidifier provided moisture. The electrical heater functioned a bit differently. There was a setup timing in advance. Usually herb liquid was used so that bathers could deepen themselves into warm liquid and relax a short explanation from spots' owners.

The interview was also targeted to interviewees who had specific knowledge in technical questions. Two engineers and one governor participated in the interviews, too. Questions 10 and 12 were about how people thought about coal burn stove with safety standard and the idea of a factory establishment. In the answer, an electricity engineer who worked in the Hai Phong's harbor service limited company Nguyen Dinh Chung said "generally it is a good idea, since electricity is quite an expensive energy source nowadays even though it was supported in price by government..." and "it seems wise to use coal instead of electricity sometimes, there is always shortage of electricity, blackouts are very common. The main electric sources in Vietnam are hydropower and thermo-power. The weather effects such as unpredictable flood and drought may influence the supply of electricity" and "the coal-fire stove sounds more stable after all". In the end of the interview, the engineer gave a suggestion for gasified use for sauna since it was very clean and as safe as electric use.

From another interview, thermo-engineer Hoang Cong Nguyen working in LG's research and development apartment (interviewed 19th Feb 2011) agreed with author that coal-fire sauna made in Vietnam would be very promising. There had not been any similar products before. He also added a few raising concerns that "there would be a high risk for coal uses, firstly heating that might cause burning and secondly smoke coming out of the chimney possibly make users doubtable about its safety to health". Another suggestion was "flue is not a big problem if materials were carefully chosen to build up the chimney. Activated carbon or activated charcoal can be added to reduce dangerous out-coming toxic gas. Moreover Nano filters could

assure the safety”. The interviewee encouraged researcher at the point “Charcoal has been used as the main energy source for long because of its cheap, easy to use and availability. Even though society and living standard has improved a lot, people will not be able to abandon traditional energy. Electricity and gas are clean for use in sauna, but coal burn stove still has its own position in the competition”.

Eventually there was an interview with a city governor in National Environmental Institute about his opinions towards coal-fired sauna and the idea of a factory establishment. He said it was both challenging and benefitable if the addressing issues would be managed properly. Good points were “in order to improve domestic production quality and help domestic companies, factories and enterprises the government appeals to the Vietnamese to use Vietnamese products [6]. This slogan has impacted domestic good consumptions significantly lately” and “establishment of a new factory would create job opportunities for local people and contribute to local taxation office”, said the official Le Quang Tuan (interviewed 20th Feb 2011). “In contrast, using coal burn increases carbon dioxide emission and has negative effects to human health. The final product will be checked strictly before permission can be given by the authorities. Additionally, Vietnam is a member of WTO so products manufactured must meet the latest standard”.

In the question number 11, most of respondents expected the prices from 150 to 300 euro for a coal burned sauna stove and from 400 up to 600 euros for an electric sauna stove. Meanwhile they were willing to pay 200 to 400 euros for a gasified consumption stove.

4.3 Findings

Both empirical techniques, quantitative and qualitative methods were implemented to gather data which was gathered by self-administered structured questionnaires and in-depth interviews. The response rate was satisfied and good. The findings from the researches are:

- Many Vietnamese people experience steam bath but most have not heard or tried Finnish sauna before (dry steam bath as explanation to respondents).
- “It is predicted Finnish sauna to be very promising to Vietnamese because rheumatism is very common to Vietnamese people. According to Vietnamese traditional folk medicine, having a steam bath is a very effect remedy to the patients” said a respondent who was a physiotherapist.

- Targeted groups for sauna are aged from 20 to 60. Among them, the group of 46-60 years old has the highest possibility to purchase the sauna package at home. Meanwhile other groups would prefer to go to the services.

- Due to a hot summer, sauna can be used only in 8 months per year in Vietnam.

- Sauna and steam bath system or spa's facilities are mostly imported from China and the prices are very competitive.

- End-use bathers in Vietnam do not consider brand names of products of steam or sauna baths as long as they are contented of a relaxing moment.

- The idea to establish a factory that manufactures sauna stoves is good. There are also many challenges the investors would meet. The suggestion is to find somebody who is interested in the subject to invest since it is benefit able.

- A coal burn stove must be very elaborately planned and marketed since the response rate to this product's interest is low.

- Many suggest the use of gasified heating stoves instead of electric and coal burn ones.

- A business culture is noticed "Once you win a customer and his satisfaction after a purchase and provide good after sale service, you already win all his friends, too" and "everyone in business has their own friendships, and it is important to explore that relation with good attention".

In conclusion of findings, the near future of sauna at home in Vietnam is very benefit able and promising. However the idea of a factory establishment is still vague when the researcher has no experience, investment sorts and social relationships. Fortunately in the end of the project, Mr Vu Xuan Thai (chairman of a building and transporting company in Hai Phong) is interested in this topic and encourages the researcher to build a strategic marketing and business management processes for the current work flow whether it is able to succeed or not. According to the chairman's opinion, this business is risky to invest but it consists of a hugely latent market. The one can manage the marketing and production plans would have very benefitable business.

The researcher is actuated by that idea to take this project to another stage which will be more related to management of sauna planning and production in Vietnam. Thus new theories will

be selected and used in this thesis. The aim is to build up an organizational level of management for a case local company and the quality is defined as the key to succeed.

5 THEORIES APPLIED

Theory may be viewed as a system for ordering concepts in a way that produces understanding or insights (Zaltman, 1977). A theory which includes more than one concept and the concepts are linked together is a set of interrelated concepts, definitions, and propositions that present a systematic view of specifying relations among variables with the purpose of explaining and predicting phenomena. (Ghauri & Gronhaug, 2002)

In any research literature, a distinction is often made between the following two strategies that are theory before research and reversely research before theory. (Ghauri & Gronhaug, 2002) These two were both applied in this final thesis.

In this chapter, from the marketing researching results and findings the researcher was able to select and adjust new theoretical tools to the case company. This study case would be successful in reality if the quality of product and the quality control of management were used properly. Understanding customers' and interest groups' expectations would be the key of success. Based on these requests, the Quality Function Deployment was selected as a strategic tool to gain the goals.

5.1 Quality management methodology

Dr Yoji Akao, who originally developed QFD in Japan in 1966, defined it as a “method to transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the manufacturing process.” The author combined his work in

quality assurance and quality control points with function deployment used in value engineering. [7]

Quality Function Deployment (QFD) is a structured approach to defining customer needs or requirements and translating them into specific plans to produce products to meet those needs. The "voice of the customer" is the term to describe these stated and unstated customer needs or requirements. The voice of the customer is captured in a variety of ways: direct discussion or interviews, surveys, focus groups, customer specifications, observation, warranty data, field reports, etc. This understanding of the customer needs is then summarized in a product planning matrix or "house of quality". These matrices are used to translate higher level "what's" or needs into lower level "how's" - product requirements or technical characteristics to satisfy these needs. (Pyysalo, 2009)

The active involvement of these departments can lead to balanced consideration of the requirements or "what's" at each stage of this translation process and provide a mechanism to communicate hidden knowledge - knowledge that is known by one individual or department but may not otherwise be communicated through the organization. The structure of this methodology helps development personnel understand essential requirements, internal capabilities, and constraints and design the product so that everything is in place to achieve the desired outcome - a satisfied customer. Quality Function Deployment helps development personnel maintain a correct focus on true requirements and minimizes misinterpreting customer needs. As a result, QFD is an effective communications and a quality planning tool. (Pyysalo, 2009)

5.2 The house of quality and QFD process

"The House of Quality" is the first of matrices. The matrix displays customer needs and preferences' containing a list of technological possibilities to achieve those. Customer weightings are applied to prioritize the most important features. QFD uses a series of matrices to document information collected and developed and represent the team's plan for a product. The QFD methodology is based on a systems engineering approach consisting of the following general steps: (Pyysalo, 2009)

1. Derive top-level product requirements or technical characteristics from customer needs (Product Planning Matrix).

2. Develop product concepts to satisfy these requirements.
3. Evaluate product concepts to select most optimum (Concept Selection Matrix).
4. Partition system concept or architecture into subsystems or assemblies and flow-down higher- level requirements or technical characteristics to these subsystems or assemblies.
5. Derive lower-level product requirements (assembly or part characteristics) and specifications from subsystem/assembly requirements (Assembly/Part Deployment Matrix).
6. For critical assemblies or parts, flow-down lower-level product requirements (assembly or part characteristics) to process planning
7. Determine manufacturing process steps to meet these assembly or part characteristics.

The following figure was the matrix house of quality and it was designed from potential sauna customers' requirements, according to data and information gathered from marketing researches. Modifications are based on the basic template of the house, varying in size and need that would be presented in the figure underneath.

By following the 7 steps above, the relations between customer's need, company's fulfillment to customers' satisfaction and requirement can be analyzed and evaluated.



FIGURE 7. Trilogy strategies (Hoyle, 2007)

6 ANALYSIS ON THAI HUNG COMPANY AS A CASE STUDY

6.1 Stakeholder's needs in Thai Hung limited company

The stakeholder analysis deployed the views of interest groups in the organization which is evaluated of the success. This step identified the stakeholder needs by examining the stakeholders relative to the purpose, mission, vision and values and the results would be a distinct set of needs and expectations. (Hoyle, 2007)

Customers need the sauna and the service package that work properly. They should be easy to access and maintain e.g. high reliability, reasonable price, human-friendly and especially without any hazards from sauna facilities, building. Eventually, prompt after-sales service is considered seriously.

Shareholders need financial return on investment and above average growth. They also expect to expand their business to relative fields with building construction works so the sauna building can be a promising business. Shareholders of company include the chairman Vu Xuan Thai, Nguyen Duy Tuan and director Nguyen Duc Thang.

Employees are a group of 12 people. Depending on different types of jobs, usually there are 3 employees working in production. Other 3 workers are in mechanics section. The rest of 6 will be traveling with the projects. Depending on types of jobs and qualifications of workers, the income varies from 100 to 200 euros in a month. The working time is from 7.00 to 17.30, lunch break was from 11.30 to 13.30. It is estimated about 8 hours a day. The working time can be changed corresponding with company's status.

Suppliers are producers or sometimes subcontractors that deliver galvanized, purlin, zinc, steel and angle iron and wooden construction for special demands. The transactions and invoices have to be paid after delivery. Sometimes the cases should be flexible, according to sensitively financial situations if the business is not going fine. In that case, the debts should be collected by the next delivery or the next order. Suppliers need to understand partners well enough so that sometimes co-operation helps to withstand the hard time. It is very appreciated in Vietnamese business culture.

Society includes the local community and authorization which require carefully that the statutory laws and regulations are obeyed judiciously. When the taxes are collected annually on-time, the jobs are created to help local employees, reducing unemployment rate for the municipality.

6.2 The goals of Thai Hung limited company

The new goals of the company are to exploit the market and produce the sauna in Vietnam in a long term business. These are clarified by the top management, Mr Thai, Tuan and director Thang.

The mission is set to reach the high quality of products and the high quality of management. By doing this, the goal will be achieved by following the drawn paths of quality policy and customer focus according to company documents.

The vision of the company in next 3 years is becoming the market leader in saunas and the sauna building section in Hai Phong city. The sauna can be well known as an excellent product. Furthermore, the necessary expansion to other cities will be considered within 5 years.

The aims and goals in the near future are to concentrate on customers whose needs and requirements for the sauna can be figured out and understood. These tasks will be done by the marketing group and production processes are to be done by production planner afterwards. The fundamental principle for accomplishing the organization goals is Quality Function Deployment.

6.3 Critical success factors for the company

Apparently critical success factors are pertinent to the survival of an organization and although this does largely depend on satisfying stakeholders and meeting business objectives, there will be factors that influence the organization's ability to do this. The factors will impose constraints on the processes established to accomplish the mission. (Hoyle, 2007)

This chapter discusses two theoretical tools that helped to analyze and measure the market relative to Thai Hung's company and its business position. PEST (Political, Economic, Social, and Technological) analysis to identify what was going on in the external environment that affected the future direction of the company and the success of its business position. Nonetheless looking at the organization itself, without a clear understanding of strengths, weaknesses, opportunities and threats business plans might fall down. The SWOT (Strengths, Weaknesses, Opportunities and Threads) analysis was akin to a capability assessment. (Hoyle, 2007)

6.3.1 PEST analysis

Political facts are concerned:

- Environmental, health and safety issues and consumer-protection legislation. The new product of company is the sauna package that delivers relaxation to bather, improve health. The package also consists of installation of building construction works. It is manufactured to satisfy safety standard to prevent hazards of toxic effects and inflammability.
- The company has proper legal and enterprise license to produce the product.
- The Finnish sauna is new and innovative product to the market. There may not be any competitors that have produced them already, according to research.

Economic analysis:

- Transactions between company and suppliers are usually made on cash or bank transfer. The tax rate is evaluated at the end of a month. Documents are sent both to owners and the tax office.
- Exchange rate between VND and foreign currency is predicted to grow since the inflation is predictable to increase by the next quarter. The reason is that the government has stopped supporting the price of energy sources such as petrol, gas and electricity.
- The domestic producers may not satisfy customers with quality of products and service. They are facing a trend that customers intend to use imported goods more often.
- Inflation in Vietnam in the last 4 years has been reduced but still remained at high level. It was estimated to be 11,75% last year while interest rates appointed to VND was

9,6% and to USD 6%. The success of Vietnamese government is to create job opportunities for three millions of unemployed. GDP of Vietnam has increased gradually for a last few years, varying from 6,7% to 8,5%.

- There is a great advantage for enterprises in Vietnam when they have a lot of available labor force at working ages with low wages.
- The income distribution depends on geographical facts that people who live in big cities can earn much more than the ones from rural area. The income difference can be up to 40 times.
- The climate has been observed to change in recent years as the influence of global warming. The winter seems to be colder and last longer than before.
- Most consumers in Vietnam prefer to choose products in shops. They want to assess by touching, checking and sensing them. They feel reluctant and hesitated to use internet for purchases. Reversely young adults pay more attention and are interested in doing that indeed.
- The main materials that can build the sauna stoves and sauna room are readily available in Vietnam. There are many big steel producers far in the North. There are also many iron mines and several other ones are being exploited. Due to the national strategy to control prices of products in Vietnam, the citizens are supported when purchasing energy sources such as gasoline, oil, electric and coal. The enterprises and companies have the rights, too. For this reason, domestic steel manufacturers have offered cheaper prices compared to imported steels from international companies lately. The wood is used to build sauna is also another essential material. "Pine-trees in Vietnam can not provide as excellent quality as the ones coming from Finland or Sweden", said Mr Doan Van Giang (owner of a wood manufacture factory in Hai Phong). "Fortunately there are several other sorts of wood that may be substituted for sauna in Vietnam. Additionally due to non- tariff barriers between ASEAN countries, imported goods from neighbor countries such as Laos and Cambodia are also other options." Especially it is not so hard to find the original Finnish sauna wood because Vietnamese paper industry still rely mainly on the utilization of imported wood that comes from three main markets such as New Zealand, Finland and Chile. [10]

Social analysis:

- Compared to the surrounding market, Thai Hung limited company is quite a big enterprise.

- The company communicates its image via advertising on television, personal selling and so on.
- The age group that the company targets the business is from 31 to 60 year old males and mixing some females. Due to the culture aspects, the men play a more important role in the family in decision making.
- Many entertaining spots are opened to attract customers, but young adults aged from 15 to 30 are considered as the most potentially profitable. This thought makes older groups out of business attention. Having sauna at services or at home will be a business idea that connects both old adult's group and service suppliers. Many share thinking that after parties with friends and full of drinking, it feels good having a place where they are able to sit and relax, in a steam bath or massage service. This lifestyle promises to be much more popular in the near future as the development of society and improving living standard.
- A steam bath or sauna has enthusiastic opinions from public because of its testified positive affect to human health, according to research and traditional medicine.

Technological

- Both using traditional energy source as coals, charcoals and modern types of electricity and gases.
- The sauna product should be easy to handle and access, maintain and replace if necessary after sometime use.
- In order to assure the sauna work properly and without any problems, extra devices should be installed such as carbon monoxide detector and thermometer to measure conditions inside a sauna. Chimney building is crucial for of coal-fire use, or extra dryer for sauna after use is recommended among many options when buying the package.

6.3.2 SWOT analysis

Strengths concerned are:

- The company has competences of variable civil construction works and well-known as one of the biggest enterprises in local area.
- The management team of company is experienced in many business fields before entering to this section. Therefore interaction and understanding between members

helps to reduce risk of ineffective managing. Nonetheless management style is always learnt and up-dated with nowadays business.

- Manufacturing sauna stove and its installation would become one of the competitive advantages for the company as it was a new and innovative product to the market.
- Marketing of the company concentrated on personal selling and public relations.
- The price for the sauna has to be reasonable and affordable. The quality is the key of the business audit. It must be understood thorough in the company. Prompt delivery is the target of transporting from manufacturer to customers with proper cares and attention. These actions build the company reputation.
- In order to manage properly the business processes, company is planned to apply for ISO certifications as a part of development procedures, from local enterprise to become a national brand name, further more becoming notorious in the South East Asian markets.

Weaknesses concerned are:

- There will be conflicts between recent management groups when the new management systems are launched. It takes time to get accustomed to the situation. Confusion of management commitment can happen during changes.
- There are no such certifications for management as ISO and workers are not much qualified about safety issues during observations of researcher.

Opportunities concerned are:

- The population in Hai Phong city has increased recently, lead to the expansion of city area. Many new companies and enterprises are attracted by new taxation systems which are given and supported by local government. When new companies create job opportunities to local people, the living standard of local people also will be improved. For these reasons, sauna manufacturer will see an insight of success when it mutually benefits all the interest groups.
- The sauna products in Vietnamese market nowadays are usually from China. They are imported from different retailers or small companies from different manufacturers. Therefore, the quality is not stable and in the situation of a buyer, they are not likely satisfied of the product if malfunction or defects of products happened. It will take a long time to have customers' service response because production phases and services are far from each other. This point is considered as an opportunity to the

company when it has both production and service teams working at the same target, to satisfy the customers.

- Hai Phong city is located in a crucial position in Vietnam map where it consists of both national overland roads systems and the 2nd biggest port in Vietnam, 100 kms far from the capital with a resident of 6 million people. The capital is planned to be the prospective market in the near future. By sea way, it takes about a couple of weeks for cargo ship to go to Ho Chi Minh city, the biggest economy municipal in Vietnam and the promising future market, too.
- The Hai Phong municipal economy focuses on industrial services as import and export, cement industry, steel manufacturing, ship building and Japanese robotic processors producers companies, garment and leather shoes industry and agricultures and so on. The trend of Hai Phong economy in the service sector is growing gradually to circulate goods transferring to and go at a prompt level.
- With more than 10 regular workers the company can withstand high volume of works and its capacity can be also increased when needed by division of working shifts.

Threats concerned are:

- The price of electricity and oil are predicted to increase in the near future when the government price support concludes. The increasing inflation has been observed to make wages and prices increase in last 2 recent years but the increasing between wages and prices is disproportioned. This change will limit purchasing decision from specific groups that are affected by wages and prices.
- There are several sauna manufacturers from China who can offer very cheap prices to customers.
- The weather in Vietnam consists of quite hot air and high humidity in the summer. It negatively affects to basic characteristics of sauna such as the fading of the paint protection, rusts on the steel surface and electric chipboard at a time defected by the condensed moist.
- To solve problems that are be caused by the weather affects, there is a need of a good material engineer who can do research and carry out experiments to find out the best possibility for materials which will be used in Vietnam.

6.4 Management process principles

Most organizations are structured into functions. The functions are like silos into which work is passed and executed under the direction of function manager before being passed into another one. In the next silo the work waits its turn. Each function competes for scarce resources and completes a part of what is needed to deliver product to customers, this firstly came up by Adam Smith and later Frederick Taylor, Henry Fayol and others. (Hoyle, 2007)

Drucker defined a function as a collection of activities that make a common and unique contribution to the purpose and mission of the business” (Drucker, 1977). Functional structures often include marketing, finance, research & development and production that are divided into departmental structures that include , tooling, maintenance, purchasing, quality, personnel and accounting etc. The function can be carried out by a single department or it is split among several departments, the expertise of all the departments are needed to fulfill a customer's requirement. It has been proved to be very successful primarily because of developments in core competences. Nonetheless the works are always executed as a process it moved on through a variety of functions before the desired results are met, this causes bottlenecks, conflicts and sub-optimization, creates gaps between functions and does not optimize overall performance.(Hoyle, 2007)

Instead of managing results by the contributions made by separate functions and departments, we manage the progress which delivers the results regardless of which function or department does the work (Hoyle, 2007). This is a more effective approach, ignores functional and so called department boundaries are presented as below figure:

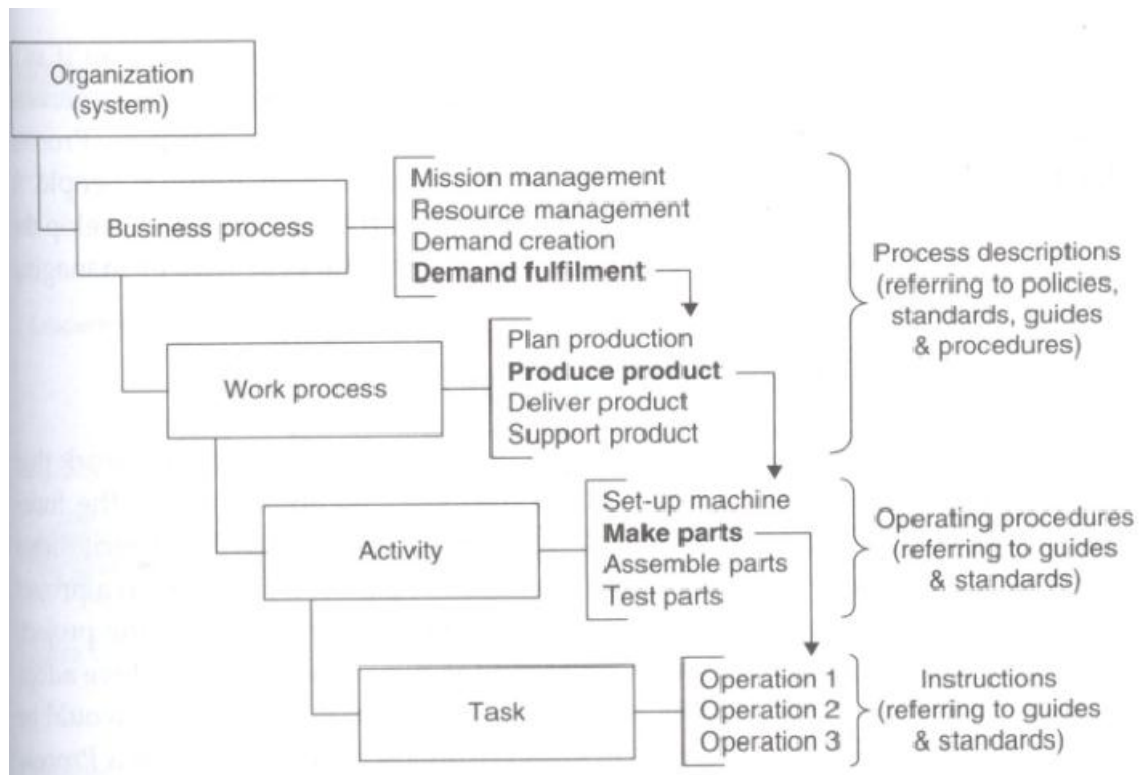


FIGURE8. Process decomposition of work. (Hoyle, 2007)

“Work can be organized in three ways, by stages in a process, by moving work to where the skill or tool is located or assembling a multi-skilled team and moving it to where the work is”. (Drucker, 1977)

Sauna has not been on the Vietnamese market yet so it is necessary to create demands from potential customers by the marketing team. The Finnish sauna first needs to be well advertised to people and to the public with its healthy effects.

6.4.1 Creation of demand

The potential customers that the company initially focuses on are middle-aged adult people. The information is gathered and analyzed by the marketing team. Work done by marketing team will result into the design of sauna, the production process and they are based on

customers' requirements as Quality Function Deployment standing for and associate the development programs in the future.

The company sets up the organization for customer focus and orders' driven market, therefore quality function deployment theory is used to assure the success of the company. The Finnish sauna types are very various due to its developments history, which was mentioned earlier in chapter 2. Depending on needs and requirements of customers, these products will be mixed in styles of uses. For example, brisk stove is a very early type of sauna. It will fit consumer use if they require brisk and other terracotta materials.

The 4P's use

In order to stay on the market with a new product, the progress on how the marketers of the company promote the product and service is considered seriously and crucially. The 4P's use in marketing is designed with first of all an advertising plan for gathering attention of the market. Multi-media and print advertisements will be used to popularize Finnish sauna to public such as local or national commercial advertising. Brochures handout at location where people usually go having a steam bath, delivering the company's new products and service or broadcasting to regular customers in building fields, with whom the company has dealt business before, will become a part of advertisements. Furthermore, public relation plays a vital role in the way how sauna can go into people's minds.

Reference groups are used as a way to get people's attention to the Finnish sauna. The athletics and celebrities will be selected to bring sauna's image to the consumers, considering the health effects and approve a healthy living style.

One special agreement is made between management group and the researcher to attract public relation. It is for every product sold, an amount of 5% of benefit will be fed to a fund that is organized by company to support the local schools such as ship yard building, vocational schools and so on. The fund is meant to offer scholarships which help and support students that either have unlucky lives or the ones are not able to afford the tuition fees or whose parents are disabled and handicapped after the wars. After graduation, company allows the best among good students to come and have a training, part-time jobs during school time or summer jobs.

Requirements from customers' orders are specified in characteristics of the product's functionalities which are made in advance by the marketing team or the selling persons. All the information will be converted into enquiry, data concerned sales. The sauna styles and

promotion programs that are included are processed into contract negotiation with more details of the price, the time of the delivery, the means of transportation and the warranties. At last customers will receive a phone call from the person who takes care of customer services to confirm all the stages of the work that have been done.

The company contacts other suppliers or subcontractors to find out what the customers expect to have in the sauna package. If a customer is interested in a completely wooden built sauna room, subcontractors from wooden construction sector are considered first. In case the customers pay more attention to brisk sauna, wooden floors are probably too expensive and not suitable. Alternative materials that are impervious to heat or heat resistant can be used then. Eventually, an agreement or contract between subcontractors and the sale manager of the company needs to be made. In the agreement, the time of delivery and quality of construction also has to be declared.

The company truly understands their competences so that it can preserve a high performance of the work-flow to satisfy customers' needs and build good relations with co-partners.

6.4.2 Fulfillment of demand

Throughout the thesis, the main purpose of this project is to manufacture a "sauna stove made in Vietnam" which is burning coal or an electrical sauna stove for Vietnamese users. The stoves are designed and manufactured by the company whereas only wooden works will be done by subcontractors. Thus, a manufacturing aggregate plan is made upon the requisitions of production.

Production plan

An aggregate planning attempted to match the supply of and demand for a product or service by determining the appropriate quantities and timing of inputs, transformation, and outputs. This plan was considered as the "planning horizon" from 3 to 18 months, with periodic updating. It was also implicated as a managerial statement of the period-by-period (time-phased) production rates, work-force levels, and inventory investment, given customer requirements and capacity limitations. (Suistomaa, 2009)

In this aggregate planning, a mixed- strategy tool was used, combining of both active strategy and reactive strategy which attempted to handle fluctuations in demand by focusing on

demand management and the use of pricing strategies and/or advertising and promotion to increase sales and attract new customers. A highly important fact was the company's requests for the customers' advance-orders. Additionally passive (reactive) strategy attempted to handle fluctuations in demand by focusing on supply and capacity management. In this way, work size and work force size could be controlled and adjustable by hiring of labour or layoffs of utilization and equipment through overtime or idle time. To build or draw from inventory and uses of subcontract production, negotiate cooperative arrangements with other firms were considered carefully and eventually to allow backlogs, back orders, and/or stock-outs. (Suistomaa, 2009)

For the company case study, decisions made on production, staffing, inventory and back-order levels.

Production

The workshop is designed to fit a new work flow for sauna manufacturing on the current work flow. Therefore, process layout is changed to adapt work procedures such as work station area, lines installation either of conveyors or trolleys followed after each work stage. Work schedule has to be made according to work stages of production, and followed by employees, controlled by supervisor and managers.

The equipment contains the rolling machine, the bending machine, the cutting machine, the welding tools, the grinding machine, the panting tools and the air-presser machine and all other necessary tools.

The staff for the sauna stove production line consists of 7 workers among 12 in the company and 1 engineer who will be appointed the team leader and also supervisor of the group. According to work process is made in the schedule, 2 employees can work with spare lamella of steels to grind and to cut pieces. The next stage consists of 2 workers to make lamella bending of box-shaped body shell for the sauna stove. Tasks are done in accordance to drawings, consisting of heat exchanger surfaces (curling surface to emit the heat better), inner and outer shells for electric stoves and a combustion chamber if the product is the coal fired stoves. The welding parts should be done by a welder who will mate the outer and inner shell bottoms by welding joints.

Moreover, the protection paint skin for outer shell that is very important will be done by a skilful painter to make a proper job. Inside the shells, the heating coils go around the stone to transfer the heat. These parts can be either bought directly from the retailers, or be manufactured by

the company. Material selection is crucial for the quality of the heating coils. That explains why the materials used for sauna must be tested before launching into production and delivering to customers.

A work supervisor will be the one who monitors all the work that has been done in the production. He is also responsible for the selection of thermostat (thermocouple): a module on the sauna heater or near by the sauna heater to prevent overheating. This part works with a control panel to adjust the level of the heat, according to what a customer expects to get. Other functions are optional and vary in the types, the prices and performance, according to customers' needs such as timer knob that controls on how long the sauna heater is setup. Sometimes the timer is mounted on heater shroud. There are usually 2 types of timers; 60 minute and 9 hour pre-set with a contactor described as an electrically operated switch for high voltage power. The other two timers are sauna control faceplate, commercial saunas are used for most of the day and over the years the control faceplate probably becomes scratched and unreadable. Sauna rocks that are set between heating elements, store the heat and release a softer heat allowing water to be used for traditional steam sauna.

In this production plan, concurrent engineering is also used for planning. The idea is that all the involved departments work together for a common target simultaneously, rather than in sequence. Thus, they achieve a clearer understanding of each other's needs and contributions, and a need of much a shorter elapsed time between its requirement and its fulfillment in the end. It can be seen that any organization pursuing the concurrent engineering approach will require the active involvement of purchasing staff, and in many cases that of vendors. It is applied to subcontractors and suppliers of components too.

Inventory

In the case study of Thai Hung's company, the inventory can be classified as:

Raw materials: steel lamellas, timber, heat elements such heat transfer coils, sauna stones, painting liquids, mineral wools, cellular plastic, aluminum foils, alloy pipes and other materials for chimney builds.

Components: thermostat control boards, timers, contactors, sauna control faceplate and so on.

Consumables: maintenance oils and lubricating, paints, nails, rivets and detergent fluids and so on.

Finished goods: Electric and coal fire stoves for sauna, gasified sauna (imported).

Received goods from suppliers or subcontractors delivery must be monitored by the person who is responsible for purchasing processes. The person can be the sale manager or production manager. The inventory works are registered into document paper and also on computer works. A good tool for this is Excel program because it is easy to function and to use. This part of work requires the sale engineer and the production engineer to have competence of concurrent engineering (CE) to design work layouts and suppliers' assessments to make wise purchases to benefit the company.

The final products are delivered to customers, including installation and after sales services. Sale items should be recorded with all information on product description as well as customers' details to control further purchases of materials and demand forecasts as the company used the mix-strategies in production plan.

Distribution of products

From the day an order has been placed by the customers to the day the item will be delivered to them, a standardization of time is a requisition of the producer to inform customer milestones timing on what the work has been gone in work schedules. This part acquires a fast customer service response program which updates all information, in the aim of service improvements at high level, for example automatically informing to customers by emails or phone calls for after sale services, especially to business to business customers.

The finished product is packed in a card-board box and dispatch to customer according to timing, term and conditions in the transaction papers. With the delivery it is also possible to install all the parts to give a read-made sauna manual to the customer. The works take place of all requirements to fulfill the quality such as chimneys built up if necessary, thermal insulation, water systems, wooden works and air-ventilation and so on.

Just-in-time (JIT) term in management can be the ideal tool and goal for the company to preserve a top performance in manufacturing and competitiveness to other producers and services' suppliers. This helps to minimize the warehousing to prevent unnecessary costs from purchasing stages to response fast to customers, and also acquire the whole organization to work at high level.

Services

Eventually this process includes the post-delivery activities, also concerns the installation of the sauna stove into the sauna room, where a technician or a deliveryman from the company comes into customers' house to do the job to test running the stove to make sure it works

properly. The delivery bill of goods with the signature from customer will be collected as a legal fact. Customer is informed about the technical support issues, manual books and a warranty for the product, is given, too.

Warranty time of an electric sauna stove given by the producer is 5 years. The coal fired sauna stove has a warranty of 3 years. Additional painting of outer shell will have a 2-year-warranty.

It is recommended by the producer to improve quality of the product and prolong the life time of the product by purchasing periodical maintenance service from the company. All the information on products, service can be found from the company's website. There will be also a channel in the website so that customers are able to give reviews or comment on the service and products.

7 DISCUSSION AND CONCLUSIONS

This section starts with a methodological discussion on how the thesis study was performed, regarding both literature review and the case study. Findings follow in a discussion of the results mentioned in the thesis and at last, important conclusions and suggestions for further development and future research are be made.

7.1 Methodology discussion

Literature could be found firstly regarding the marketing research methods. By the findings summarized from the data which was gather and analyzed, there is a great opportunity to conduct the project into a real business where the researcher found out a company who was interested in and supported the ideas of bringing the Finnish sauna to Vietnam and production of the electrical sauna stove, the coal-fired stove or the gasified stove. However the main academic focus this final thesis tried to bring out was the managing theories applied, particularly in the company Thai Hung case, in which a marketing plan and strategies, a

production plan, a layout work design with Concurrent Engineering in manufacturing were planned. Furthermore, the quality of products and services has been analyzed, followed and used tools of Quality Function Deployment of which the matrix house of quality was created to “listen to customers’ voices”.

In the research, two marketing tools were used which were qualitative and quantitative methods. The quantitative method was designed in form of questionnaires handed out to respondents, the aim of which was to find out situation of sauna on the market among respondents who had accessed or tried sauna before. The qualitative interview research was created and collaborated after the data had been gathered from quantitative research, to select useful and necessary data about the idea of the sauna in such a country as Vietnam. The respondents for this in-depth interview research were people who had dealt with the sauna business already or people who were related to field of techniques of the sauna building, knowing the possibilities for future production.

After the findings, a company offered the researcher an opportunity to plan the product feasibility in marketing and production. By then a marketing plan and strategies were designed by the researcher as well as the production plan. Tactical tools of quality in management were considered crucially and customer relations were understood to be the best way to manage the competitiveness with any other producers of sauna.

7.2 Results and discussion

The results were half successful when many people paid attention to coal fired stove and electrical one and along with half of people showed up interest in sauna which used a gasified system and technology to heat it up. The finding was completely different from the sauna types mentioned in the beginning of the research. In the near future, Finnish sauna would become more popular and worth using due to its positive effects to health and considered as a type of relaxation.

7.3 Conclusions and future research

The goal of this final thesis was obtained when the researcher found out the needs of potential users for sauna bath in Vietnam. Implemented researches were done on how it was possible to make sauna stoves in Vietnam.

The validity of the data gathered might be effected somehow as many respondents had no experience about the sauna and what it was like, the answers would have been much different otherwise. On the other hand, the number of questionnaires should have been bigger because the population in the city researched was about 3 millions inhabitants.

The findings surprised the researcher when finding out many things that had not been planned or meant to be studied in this thesis. New theories were also kept in mind such as culture in doing business, customers' treatment in different cases and technology application in different purposes of uses.

Due to time limit, there were some parts which would have necessary to add to this final thesis such as design of the coal fired stoves, materials selection and a very important management tool for production, Material Supply System (MSS). These could be the future research based on this final thesis.

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APPENDICES

Appendix1

List of questions in in-depth interview

1. What is your name?
2. How old are you?
3. What is your occupation?
4. Have you heard about sauna (kind of steam bath basically) which comes from Finland and its reputation?

[] No. Are you interested in trying once?

[] Yes. How?

5. What types of steam baths your services are utilizing?
6. Do you have any ideas about sauna producers in the market and what types you are interested in most?
7. What factors do you think would be the most important when you consider to buy a sauna product?

	Price	Product	Place	Promotion	Services
Very important					
Important					
Not much					

8. What seasons do your customers have sauna most regular?
9. Do your customers pay much attention towards changes of steam bath sorts they are using, for examples try on different types?

10. How do you think about coal fire stove for sauna with safety technology and saving on prices?
11. At which prices are you willing to make a purchase for a sauna stove?
- | | | |
|-------------------------|--------------|---------------|
| Coal fire: 150-300\$[] | 301-600\$[] | 601-1000\$[] |
| Electric: 250-400\$[] | 401-700\$[] | Over 700\$[] |
- Gas use: (in your opinions)
12. What do you think about establishment of a factory that manufactures such the stoves above in general and for coal fire stove especially?
13. Any further suggestions and comments?

The End

Thank you very much for your co-operation

Appendix 2

Khảo sát về nhu cầu xông hơi tại Việt Nam

Thưa ông/bà,

Ai cũng biết thư giãn đóng vai trò quan trọng trong cuộc sống hiện đại nơi mà bạn gặp bao bộn bề trong công việc Cuộc khảo sát này được thực hiện bởi 1 sinh viên chưa tốt nghiệp với mục đích tìm hiểu nhu cầu cũng như thị hiếu của khách hàng đối với lò xông hơi (sauna tới từ Phần Lan), được thay đổi cho phù hợp với thị trường Việt Nam, vơi mong muốn tìm ra cách tốt nhất để đưa đề tài này hiện thực hoá trong cuộc sống , phục vụ nhu cầu của mọi người.

1. Bạn tên là gì?
2. Bạn bao nhiêu tuổi?
3. Nghề nghiệp của bạn là gì?
4. Bạn đã từng nghe tới sauna tới từ Phần Lan, và danh tiếng của chúng?
[] Không. Bạn có muốn thử?
[] Có.
5. Loại sản phẩm xông hơi mà cơ sở đang sử dụng?
6. Các hãng sản xuất lò xông hơi mà bạn được nghe nói đến hoặc từng sử dụng trên thị trường?
7. Những yếu tố nào theo bạn đóng vai trò quyết định khi bạn định mua hoặc xây 1 lò xông hơi?

	Giá cả	Sản phẩm	Nơi mua	Chương trình khuyến mại	Chăm sóc khách hàng tốt
Rất quan trọng					
Quan trọng					
Không quan trọng					

8. Giai đoạn nào khách hàng sử dụng dịch vụ thường xuyên nhất?

Với tần suất:

9. Khách hàng có bao giờ thể hiện mối quan tâm tới sự thay đổi về loại xông hơi mà họ đang sử dụng không?

10. Bạn nghĩ sao về lò xông hơi sử dụng nhiên liệu than để tiết kiệm chi phí với công nghệ an toàn cho người sử dụng?

Đặc tính	Lựa chọn	Bạn có muốn dùng thử?	
		Có	Không
Tốt và rẻ			
Đáng quan tâm			
Nghi ngờ			
Có vẻ an toàn			
Không quan tâm			

11. Mức giá nào bạn nghĩ là phù hợp với 1 lò xông hơi than hoặc điện?

Than: 150\$-300\$[] 300-600\$[] 600-1000\$[]

Điện: 250\$-400\$[] 400-600\$[] Trên 600\$[]

12. Bạn nghĩ sao về thành lập 1 cơ sở sản xuất thiết bị và xây dựng loại lò xông hơi sử dụng nhiên liệu than?

Appendix 3

Questionnaire questions

Thưa ông/bà,

Ai cũng biết thư giãn đóng vai trò quan trọng trong cuộc sống hiện đại nơi mà bạn gặp bao bộn bề trong công việc Cuộc khảo sát này được thực hiện bởi 1 sinh viên chưa tốt nghiệp với mục đích tìm hiểu nhu cầu cũng như thị hiếu của khách hàng đối với lò xông hơi (sauna tới từ Phần Lan), được thay đổi cho phù hợp với thị trường Việt Nam, với mong muốn tìm ra cách tốt nhất để đưa đề tài này hiện thực hoá trong cuộc sống , phục vụ nhu cầu của mọi người.

1. Giới tính: Nam ☐

Nữ ☐

2. Độ tuổi: 18-30 ☐ 30-45 ☐ 45-60 ☐ Trên 60 ☐

3. Bạn đã bao giờ xông hơi chưa?

☐ có

☐ không

4. Bạn thích xông hơi và đã bao nghe hoặc thử kiểu xông hơi Phần Lan?

5. Bạn có thường xuyên xông hơi không?

Vài lần 1 tuần ☐ Tuần 1 lần ☐ Tháng 1 lần ☐ Vài tháng 1 lần ☐

6. Bạn cảm thấy xông hơi kiểu Phần Lan như thế nào?

(khi nhiệt độ có thể lên đến 90 độ C trong phòng phù thuộc nhu cầu của bạn)

7. Bạn có quan tâm tới các hãng sản xuất khác của loại sản phẩm này trên thị trường?

☐ có. Ví dụ:

☐ không.

8. Bạn nghĩ gì về lò xông hơi kiểu Phần Lan sử dụng nhiên liệu than với công nghệ an toàn, sản xuất tại Việt Nam?

9. Bạn thích xông hơi ở đâu hơn?

☐ Tại nhà

☐ Dịch vụ

10. Nếu có điều kiện lắp đặt 1 phòng sauna tại nhà, bạn hài lòng với mức giá nào?

800-1500\$ ☐

1500-3000\$ ☐

3000-5000\$ ☐

Trên 5000\$ ☐

11. Loại lò nào phù hợp với nhu cầu sử dụng của bạn hơn?

Lò điện (cần từ 45' - 1h để sẵn sàng sử dụng) ☐

Lò đốt than (20- 30')

12. Nếu có 1 cơ sở sản xuất những loại sauna nói trên, bạn nghĩ thế nào về tương lai của nó?

13. Ý kiến của bạn về 2 loại lò xông hơi được nêu ở trên?

14. Bạn có thể trả lời nếu muốn hoặc không: Nghề nghiệp của bạn là gì?

Xin chân thành cảm ơn sự cộng tác của bạn.